

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/18/09 has been entered.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 10, 2-5 and 6-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant now claims in lines 19-23, "lubricant dragging bore reliefs...part", which are not described in the original disclosure of the application. As stated in paragraph 3 of the specification that the hydraulic disposed on a surface of the translatable movable machine part from high pressure region to a low pressure region upon translatable movement of the movable machine part.

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10, 2-3, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Franson et al (US. 5,127,661) in view of Workman (US. 3,497,225).

Franson discloses a sealing arrangement comprising a stationary machine part and a translatable movable machine part (e.g. the 84 is capable of moving in a translatable motion), a U-cup (e.g. 78) of a viscoplastic synthetic material, the stationary machine part (e.g. 68) and the translatable movable machine part (e.g. 84, due to the spring action between 84 and base wall of the stationary part the machine part 84 is capable of moving in a translatable direction) with an outer radius R (Radius of 84), the U-cup (e.g. 78) is disposed as a contacting joint under radial pre-stress between the stationary machine part and the movable machine part in a profiled section (e.g. groove in 68 holding the U-cup) of the stationary machine part, the U-cup has a radially outer lip (e.g. 100) and a radially inner sealing lip (e.g. 92) on the high-pressure side, the stationary and the movable machine parts are separated on the low- pressure side by a sealing gap (e.g. gap near 80 between 68 and 84) of a sealing gap width B, wherein an abutment surface (e.g. 88) of the U-cup abuts a radially oriented region (e.g. back wall of the groove) of the profiled section on the low-pressure side, wherein the U-cup has an inner radius (inner radius of 78) and an outer radius (outer radius of 78), both in the unpressurized state and in the pressurized state, the inner radius of the U-cup in the region of the abutment surface is larger than the sum of

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R and B (figures 2 and 4 show this relationship of radiuses) and the U-cup comprises an inner surface (e.g. inner surface of 92) facing the movable machine part. In the unpressurized state, the inner radius of the U-cup decreases (figure 4 shows that the inner radius decreases continuously), in particular continuously, from the low-pressure side towards the inner sealing lip (e.g. 92) in a region around the abutment surface. In the unpressurized state, the inner radius of the U-cup decreases continuously, in particular like a cone (cone shaped defined on the inner radius as shown in figure 4), from the low-pressure side N towards the inner sealing lip (e.g. 92) in a region from the abutment surface to the inner sealing lip. In that the U-cup has an outer surface (outer surface having 102) facing away from the movable machine part, the outer surface is curved concavely (concave surface after 102) in the unpressurized state. The inner surface is spaced from the movable machine part (as shown in figure 2, the inner surface of 102 is spaced from the movable machine part having surface 84, hence any recesses placed on this surface will also be spaced from the movable machine part, furthermore any recess is incapable of contacting a surface).

Franson discloses the invention substantially as claimed above but fails to disclose that the inner surface comprising several lubrication bore relief that are recesses and the recesses each extend in an axial direction from the low pressure side of the U-cup toward the inner sealing lip, and the radial depth of the individual recesses decreases from the low-pressure side of the U-cup toward the inner sealing lip. Workman discloses a sealing member having a lip (e.g. 30), the lip having an inner surface (surface having recesses 42, 44 and etc), the inner surface having recesses (e.g. 42-46 and etc), the recesses extend from an air side (air side right of fig. 6), the recesses having a radial depth that decrease from the air side to the lip (the greatest depth of the

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recesses is at 49 and the least depth is at end opposite 49 at the lip). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the inner surface of the lip of Franson to have recesses as taught by Workman, to provide lubricant return and a film to reduce wear (column 1, lines 60-65 of Workman). Furthermore the recesses of Workman are considered to be microstructures (the term microstructure is a relative term and the recesses of Workman are microstructure relative large recesses).

Regarding limitations of intended use: Applicant has claimed that upon or if the shaft is moved in the translatory direction fluid will be dragged from a first position to a second position, this would also be the case for the invention of Franson and Workman, since the references teach all the structural limitations of the claims (e.g. shaft that is capable of moving in a translatory direction and recesses on the inner surface of the U-shape cup). **Furthermore when a shaft is moved in a translatory motion the lubricant bore reliefs would provide dragging of the lubricant from a high pressure region to a low pressure region (e.g. inherent function of a translatory motion device with high and low pressure regions).**

6. Claims 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Franson and Workman as applied to claims above, and further in view of Haberkorn (US, 3,189,359).

Regarding claims 4 and 6-7: Franson and Workman fail to disclose that the outer and inner surface near the abutment surface is convex. Haberkorn teaches a seal having a U-shape having an abutment surface (12) and inner surface and outer surface (21 and 22) adjacent to the abutment surface that are convex like a circular arc (the surface 22 and 21 are convex). It would have been obvious to one having ordinary skill in the art at the time the invention was made to

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have the outer and inner surface of Franson and Workman to be convex as taught by Haberkorn to provide proper sealing under high-pressure (column 3, lines 40-43 of Haberkorn).

***Response to Arguments***

7. Applicant's arguments filed 11/18/09 have been fully considered but they are not persuasive.

Applicants' argument to the 112 rejection is not persuasive in view of what is stated in the paragraph (e.g. high pressure to low pressure) in view of claim 10. Also explained why 112 rejection to the attorney in a telephone interview.

Applicants' argument that neither Franson or Workman teach the placement of the recesses of the inner surface spaced apart from the movable machine part is not persuasive since the reference of Franson teaches that an inner surface of the U-cup of viscoplastic synthetic material is spaced apart from the movable machine part and the inner surface having recesses as claimed by applicant is taught by Workman. Furthermore the reference of Workman teaches lip seal with recesses on an inner surface to reduce wear of the lip seals (column 1, lines 60-65 of Workman) and provide fluid return (column 2 lines 10-13 of Workman).

Applicants' argument to the dragging of liquid from a low to high-pressure regions is not persuasive since the structure taught by Franson and Workman teach all the structural limitations of the claims (e.g. see rejection above) and the seal of Franson and Workman is capable of functioning as claimed by applicant.

Applicants' argument that the reference of Haberkorn does not teach the independent claim is not persuasive since the reference of Franson and Workman teach all the structural

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limitations of claim 10 and the reference of Haberkorn is used to teach limitations of claims 4 and 6-7.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer H. Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. P./

Primary Examiner, Art Unit 3676

/Vishal Patel/

Primary Examiner, Art Unit 3676